What is claimed is:

1. A process for preparing hot-melt pressure-sensitive adhesives from aqueous dispersions based on polyacrylate, and pressure-sensitively adhesive articles produced therefrom, which comprises producing highly concentrated aqueous dispersions with polymer contents between 68% by weight and 87% by weight of gel-free, molecularly-dispersely meltable and polymer particles with an at least bimodal size distribution in size ranges between 0.5 µm and 1000 µm Ø.

2. The process as claimed in claim 1, wherein 99.5% by weight - 60% by weight (meth)acrylic esters with ester radicals of C4 - C12, individually or in a mixture, 0% by weight - 10% by weight (meth)acrylic acid or methacrylamide, and up to 40% by weight of hardening monomers, such as (meth)acrylic esters or vinyl esters with ester radicals C1 - C3, styrene or other copolymerizable monomers with functional groups of sufficient thermal stability, such as amide or nitrile groups, are used as monomers.

3. The process as claimed in one of claims 1 - 2, wherein water-soluble substances which are stable at the melting temperature, preferably short-chain polymers which carry amide groups, and nonionic and also anionic low-foam emulsifiers, in an overall concentration of up to 4% by weight, are used as stabilizers for preparing the dispersion.

4. The process as claimed in one of claims 1 - 3, wherein the chain lengths of the polymer are restricted by the presence of chain-length-regulating substances during the polymerization, preferably by comonomers from the group of the vinyl ethers, preferably cyclohexenyl ethers, fumaric esters or maleic esters, and also by styrene or by hydrophilic rosins in amounts of up to 10% by weight based on polymer.

5. The process as claimed in one of claims 1 - 4, wherein the polymerization is conducted with linearly polymerizing, water-insoluble initiators which are soluble in the monomer mixture, preferably azo initiators, in amounts of up to 1% by weight based on the overall monomer mixture.

6. The process as claimed in one of claims 1 - 5, wherein meltable polymers which are soluble without gel in organic solvents are formed which have a

relative viscosity at 25°C in toluene of 1 680 - 5 000 and a melting range between 80°C and 170°C.

7. The process as claimed in one of claims 1 - 6, wherein the polymer dispersion is dewatered under subatmospheric pressure in kneading devices or extruders having devolatilizing means in temperature ranges between 90°C and 160°C and, by way of the conveying pressure of toothed wheel pumps and/or extruder screws, are filmed, in the form of a homogeneous, molecularly disperse melt, via a slot die.

8. The process as claimed in one of claims 1 - 7, wherein prior to the dewatering natural rubber latices or synthetic rubber latices in amounts of up to 70% by weight based on acrylic polymer are mixed as elastic fillers into the hot-melt pressure-sensitive adhesive dispersion, and/or before or after the dewatering up to 40% by weight of inorganic fillers and/or up to 30% by weight of polyacrylate-compatible plasticizers are admixed.

9. The process as claimed in one of claims 1 - 8, wherein, after the dewatering, up to 50% by weight, based on overall polymer, or 35% by weight, based on acrylic polymer, of tackifier resins, preferably based on hydrocarbons with aromatic fractions, are mixed in.

10. The process as claimed in one of claims 1 - 10, wherein, after the dewatering, up to 2% by weight of UV photoinitiators are admixed to the melt and/or incorporated into the acrylic polymer by copolymerization and/or up to 5% by weight of polyunsaturated (meth)acrylic monomers are incorporated into the melt and the film formed from the melt is crosslinked by means of 2 J/cm^2 - 10 J/cm^2 UV radiation and/or 10 kGy - 100 kGy electron beams, so as to give an insoluble fraction of up to 95% by weight acrylic polymer.

11. The use of the hot-melt pressure-sensitive adhesives as set forth in one of claims 1 - 10 for the solvent-free preparation of punched elements or tapes which are pressure-sensitively adhesive on one or both sides.